

Amendments to the Claims:

This listing of claims replaces all prior versions and listings of claims in the application:

Listing of Claims:

1. (Currently amended) A process for casting a metal artefact by forming a molten charge of metal from a precursor thereof, charging a die or mould with the molten charge to fill the die or mould sufficiently to form a single metal artefact and causing or allowing the charge to solidify in the die or mould to form the artefact, the process including the step of selecting the size of the molten charge to match the capacity of the die or mould so that the charging of the die or mould consumes substantially the whole molten charge, the process including the steps whereby, in combination, the charging of the die or mould is from a hollow cylinder or sleeve by means of a telescopic piston arrangement which elevates the cylinder or sleeve vertically displacing the cylinder or sleeve relative to a heating arrangement into engagement with the die or mould and into communication with a charging opening into the die or mould and a central piston of the piston arrangement enters the cylinder or sleeve and slides upwardly therein in sealing engagement therewith during the charging, while a peripheral piston of the piston arrangement, surrounding the central piston, urges the cylinder or sleeve upwardly into sealing engagement with the die or mould around the charging opening of the die or mould, the process further including cooling a lower end of the cylinder or sleeve to solidify part of the molten charge at the lower end of the cylinder or sleeve and heating the metal of the molten charge, after forming the molten charge, to raise the temperature of the molten charge, prior to filling the die or mould with the molten charge at the raised temperature.

2. (Previously presented) A process as claimed in Claim 1, in which forming the molten charge is from a precursor thereof which is a metal billet or ingot or a compact of metal particles.

3. (Canceled)
4. (Previously presented) A process as claimed in Claim 1, in which the charging is carried out by injection moulding at an intermediate pressure in the range 50 KPa - 30MPa.
5. (Previously presented) A process as claimed in Claim 1, which includes the step of purging the environment in which the molten charge is formed with a purging gas, prior to and during the forming of the molten charge.
6. (Previously presented) A process as claimed in Claim 1, which includes using a metal selected from the group consisting of aluminium, magnesium, lithium, zinc and alloys thereof.
7. (Previously presented) A process as claimed in Claim 6, which includes using a light metal selected from the group consisting of magnesium, aluminium and alloys thereof.
8. (Previously presented) A process as claimed in Claim 7, in which the casting is of a light metal artefact in the form of a motor vehicle wheel rim.
9. (Previously presented) A process as claimed in Claim 8, in which the casting is of a metal artefact in which the part of the solidified artefact which is furthest from the surface of the artefact is spaced from the closest part of the surface of the artefact by a spacing of 0.75 – 15mm, the artefact having a mass of 0.25 – 30kg.
10. (Currently amended) A casting apparatus or installation for casting a metal artefact in a die or mould, the casting apparatus or installation including a die or mould and a melting apparatus which includes a container for holding a precursor of a molten charge of metal, a heating arrangement for heating the precursor in the container to form a molten charge of metal, and a molten metal transfer assembly for transferring a molten charge of metal from the container to the die or mould, the container and the die or mould having capacities which are

matched to be of equal volume so that charging of the die or mould from the container to fill the die or mould with a charge sufficient to form a single metal artefact consumes substantially the whole charge of molten metal from the container and leaves the container empty,

the container being a hollow cylinder or sleeve, the molten metal transfer assembly being a telescopic piston arrangement for elevating the cylinder or sleeve relative to the heating arrangement into engagement with the die or mould and into communication with a charging opening into the die or mould and the piston arrangement having a central piston for entering the cylinder or sleeve and for sliding upwardly therein in sealing engagement therewith, the piston arrangement having a peripheral piston surrounding the central piston for urging the cylinder or sleeve upwardly into sealing engagement with the die or mould around the charging opening of the die or mould, and the cylinder or sleeve being relatively vertically displaceable relative to the heating arrangement, and a cooling fluid supply configured to apply a cooling fluid to the lower end of the cylinder or sleeve.

11. (Previously presented) An apparatus or installation as claimed in Claim 10, in which the heating arrangement is mounted on the molten metal transfer assembly.

12. (Previously presented) An apparatus or installation as claimed in Claim 10, in which the melting apparatus is reciprocable relative to the die or mould between a charging position where charging of the melting apparatus takes place and a filling position where transfer of a molten charge from the melting apparatus to the die or mould takes place.

13. (Previously presented) An apparatus or installation as claimed in Claim 10, which includes an inert gas supply for supplying inert gas to the container, to permit forming of the molten charge to take place under an inert atmosphere.

14. (Previously presented) An apparatus or installation as claimed in Claim 10, in which the container has a hollow cylindrical interior.

15 – 16 (Canceled)

17. (Previously presented) An apparatus or installation as claimed in Claim 10, in which the central piston has a piston head provided with a sealing surface for sealingly engaging the periphery of the charging opening of the die or mould when an entire molten charge in the cylinder or sleeve has been transferred from the cylinder or sleeve into said die or mould.

18. (Previously presented) An apparatus or installation as claimed in Claim 10, in which the heating arrangement includes at least one induction coil surrounding the container.

19. (Previously presented) A process as claimed in claim 1, in which the cylinder or sleeve is a new unitary cylinder or sleeve with a hollow cylindrical interior of constant diameter, the process including placing the new cylinder or sleeve on the peripheral piston so that the cylinder or sleeve is free-standing on the peripheral piston and the central piston enters the cylinder or sleeve from below.

20. (Previously presented) An apparatus or installation as claimed in claim 10, in which the cylinder or sleeve is unitary and free-standing on the peripheral piston and has a hollow cylindrical interior of constant diameter, allowing discarding of the unitary cylinder or sleeve after casting and entering of the central piston into the cylinder or sleeve from below.